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L1	16705	S	AMYLOPECTIN
L2	341	S	L1 AND CASSAVA
L3	62	S	L2 AND STARCH CONTENT
L4	35	S	L3 AND TUBER
L5	6	S	L4 AND AMYLOSE(W)FREE

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FILE 'WELDASEARCH' ENTERED AT 17:04:58 ON 15 MAR 2003

FILE 'WSCA' ENTERED AT 17:04:58 ON 15 MAR 2003

L5 ANSWER 1 OF 6 USPATFULL
AN 2002:262508 USPATFULL
TI Nucleic acid molecules from wheat, transgenic plant cells and plants and the thereof for the production of modified starch
IN Abel, Gernot, Copenhagen, DENMARK
Lorz, Horst, Hamburg, GERMANY, FEDERAL REPUBLIC OF
Lutticke, Stephanie, Hamburg, GERMANY, FEDERAL REPUBLIC OF
Schmidt, Ralf-Christian, Potsdam, GERMANY, FEDERAL REPUBLIC OF
PA Aventis CropScience GmbH, Frankfurt am Main, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)
PI US 6462256 B1 20021008
AI US 2000-590101 20000608 (9)
PRAI DE 1999-19926771 19990611
DT Utility
FS GRANTED
LN.CNT 1973
INCL INCLM: 800/284.000
INCLS: 800/298.000; 435/468.000; 435/101.000; 435/419.000; 435/430.000; 435/252.300; 435/320.100; 435/194.000; 536/023.200; 536/236.000
NCL NCLM: 800/284.000
NCLS: 435/101.000; 435/194.000; 435/252.300; 435/320.100; 435/419.000; 435/430.000; 435/468.000; 536/023.200; 536/023.600; 800/298.000
IC [7]
ICM: A01H005-00
ICS: A01H005-10; C12P019-04; C12N001-21; C12N005-04; C12N009-12; C12N015-29; C12N015-54; C12N015-82
EXF 536/23.2; 536/23.6; 435/468; 435/419; 435/320.101; 435/430; 435/252.3; 435/194; 800/286; 800/284; 800/278; 800/298
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . of branching of the glucose chains: Amylose-type starch is a basically unbranched polymer consisting of α-1,4-glycosidically branched glucose molecules, whereas **amylopectin**-type starch is a mixture of branched glucose chains, comprising additionally α-1,6-glycosidic interlinkings.
SUMM The molecular structure of starch mainly depends on its degree of branching, the amylose/**amylopectin** ratio, the average chain-length, chain lenght distribution, and degree of phosphorylation, further determining the functional properties of the starch and. . .
SUMM . . . mutant by classical breeding due to the polyploidity of wheat (tetra- or hexaploidity). However, a wheat mutant producing waxy-type starch (**amylose-free** starch) was recently achieved by breeding methods (Nakamura et al., Mol. Gen. Genet. 248 (1995), 253-259).
SUMM . . . particular crop plants and most preferred starch-storing plants, e.g., rye, barley, oats, wheat, millet, sago, rice, maize, peas, wrinkled peas, **cassava**, potato, tomato, oilseed rape, soy bean, hemp, flax, sunflower, cow-pea, arrowroot, clover, ryegrass, or alfalfa, in particularly potato, maize, rice. . .
SUMM . . . or plant selected from the group consisting of a potato, maize, oat, rye, barley, wheat, pea, rice, millet, wrinkled peas, **cassava**, sago, tomato, oilseed rape, soy bean, hemp, flax, sunflower, cow-pea, arrowroot, clover, ryegrass, alfalfa, and maniok.
SUMM . . . particular a monocotyledonous or dicotyledonous plant cell, preferably, a potato, maize, oat, rye, barley, wheat, pea, rice, millet, wrinkled peas, **cassava**, sago, tomato, oilseed rape, soy bean, hemp, flax, sunflower, cow-pea, arrowroot, clover, ryegrass, alfalfa, or maniok cell, in particular potato,. . .
SUMM . . . dicotyledonous plant, preferably a crop plant, in particular a rye, barley, oat, rice, wheat, millet, sago, maize, pea, wrinkled pea, **cassava**, potato, tomato, maniok, oil seed rape, soy bean, hemp, flax, sunflower, cow-pea, white clover, ryegrass, alfalfa or arrowroot plant, most. . .
SUMM . . . ensures transcription and/or translation" may also comprise a

nucleic acid molecule which leads to a timely and/or locally (endosperm, root, **tuber**, leaf, stem, seed, fruit, apoplast, vacuole, cytosol, plastid, mitochondrium, lysosme) limited transcription within a plant/or plant cell or which is. . .

SUMM . . . e.g., maize, wheat and rice grains or seeds and potato tubers and the like. For the transformation of potato the **tuber** -specific B33-promoter (Rocha-Sosa et al., EMBO J. 8 (1989), 23-29) may be used. Apart from promoters, DNA regions initiating transcription may. . .

SUMM . . . of transcription and/or translation of the nucleic acid molecule of the invention in a specific tissue (e.g., endosperm, leaf, stem, **tuber**, meristem, fruit, root, seed) or cell compartiment (e.g., cytosol, apoplast, plastid, mitochondrium, vacuole, lysosome). Optionally, the term "regulatory element" comprises. . .

SUMM . . . the only option. Also solid plastics products, such as pots, plates and bowls can be produced by means of a **starch content** of more than 50%. Furthermore, the starch/polymer mixtures offer the advantage that they are much easier biodegradable.

CLM What is claimed is:

. . . the plant is selected from the group consisting of rye, barley, oat, rice, wheat, millet, sago, maize, pea, wrinkled pea, **cassava**, potato, tomato, maniok, oil seed rape, soy bean, hemp, flax, sunflower, cow-pea, white clover, ryegrass, alfalfa and arrowroot.

L5 ANSWER 2 OF 6 USPATFULL

AN 2001:105536 USPATFULL

TI Plants which synthesize a modified starch, process for the production thereof and modified starch

IN Kossmann, Jens, Golm, Germany, Federal Republic of
Lorberth, Ruth, Berlin, Germany, Federal Republic of

PI US 2001007155 A1 20010705

AI US 2000-746390 A1 20001221 (9)

RLI Division of Ser. No. US 1998-45360, filed on 19 Mar 1998, GRANTED, Pat. No. US 6207880 Continuation of Ser. No. WO 1996-EP4109, filed on 19 Sep 1996, UNKNOWN

PRAI DE 1995-19534759 19950919
DE 1995-19547733 19951220

DT Utility

FS APPLICATION

LN.CNT 1976

INCL INCLM: 800/284.000
INCLS: 536/023.200; 536/102.000; 435/320.100; 435/410.000

NCL NCLM: 800/284.000
NCLS: 536/023.200; 536/102.000; 435/320.100; 435/410.000

IC [7]
ICM: A01H001-00
ICS: C07H021-04; C12N015-82; C12N015-87; C12N005-00; C12N005-02

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . the glucose chains. One differentiates particularly between amylose-starch, a basically non-branched polymer made up of α-1,4-glycosidically branched glucose molecules, and **amylopectin**-starch which in turn is a mixture of more or less heavily branched glucose chains. The branching results from the occurrence. . .

SUMM [0004] The molecular structure of starch which is mainly determined by its degree of branching, the amylose/**amylopectin** ratio, the average chain-length and the occurrence of phosphate groups is significant for important functional properties of starch or, respectively,. . .

SUMM . . . and a maize variety (waxy maize) was established by means of breeding the starch of which consists of almost 100% **amylopectin** (Akasuka and Nelson, J. Biol. Chem. 241 (1966), 2280-2285). Furthermore, mutants of potato and pea have been described which synthesize. . .

SUMM . . . from plants, in particular from starch-synthesizing or starch-storing plants. Cereals (such as barley, rye, oats, wheat etc.), maize, rice, pea, **cassava**, potato etc. are particularly preferred. They can also be produced by means of synthesis methods known to the skilled person.

SUMM . . . These are preferably useful plants, in particular starch-storing plants such as cereals (rye, barley, oats, wheat etc.), rice, maize, peas, **cassava** and potatoes.

SUMM . . . heating, a low maximum viscosity as well as almost no increase in viscosity during cooling (cf. FIG. 7). If the amylose/**amylopectin** ratio of this starch is determined, this starch is characterized in that almost no amylose can be measured. The amylose. . .

SUMM . . . interest, in particular useful plants and preferably starch-storing plants such as cereals (rye, barley, oats, wheat etc.), rice, maize, pea, **cassava** and potatoes.

SUMM . . . potato these parts are the potato seeds, in the case of potatoes the tubers. In order to transform potatoes the **tuber** -specific B33-promoter (Rocha-Sosa et al., EMBO J. 8 (1989), 23-29) may be used particularly, but not exclusively.

SUMM . . . the only option. Also solid plastics products, such as pots, plates and bowls can be produced by means of a **starch content** of more than 50%. Furthermore, the starch/polymer mixtures offer the advantage that they are much easier biodegradable.

SUMM . . . by recombinant DNA techniques are, on the one hand, structure, water content, protein content, lipid content, fiber content, ashes/phosphate content, amylose/**amylopectin** ratio, distribution of the relative molar mass, degree of branching, granule size and shape as well as crystallization, and on. . .

DETD [0179] 8. Determination of the amylose/**amylopectin** ratio in starch obtained from potato plants

DETD [0180] Starch was isolated from potato plants according to standard methods and the amylose/**amylopectin** ratio was determined according to the method described by Hovenkamp-Hermelink et al. (Potato Research 31 (1988) 241-246).

DETD . . . starch were dissolved in elution buffer (final volume 80 ml). The starch was derived from potatoes which produce an almost **amylose-free** starch due to the antisense-expression of a DNA sequence encoding the starch granule-bound starch synthase I (GBSS I) from potato.. . .

DETD [0270] b) Determination of the amylose/**amylopectin** ratio

DETD . . . which was isolated from the tubers of transformed potato plants was examined with respect to the ratio of amylose to **amylopectin** . The plant line R4-1 (shown in line 4 of FIG. 6) exhibited an amylose content of more than 70%. For. . .

DETD [0275] b) Determination of the amylose/**amylopectin** ratio

DETD . . . which was isolated from the tubers of transformed potato plants was examined with respect to the ratio of amylose to **amylopectin** . The plant line R3-5 (shown in line 4 of FIG. 7) exhibited an amylose content of less than 4%. For. . .

CLM What is claimed is:

39. **Tuber** of a potato plant of claim 38.

40. The **tuber** of claim 39 which in comparison to tubers of wildtype plants exhibits a reduced cold sweetening.

L5 ANSWER 3 OF 6 USPATFULL

AN 2001:44437 USPATFULL

TI Plants which synthesize a modified starch, process for the production thereof and modified starch

IN Kossmann, Jens, Golm, Germany, Federal Republic of
Lorberth, Ruth, Berlin, Germany, Federal Republic of

PA Planttec Biotechnologie GmbH, Potsdam, Germany, Federal Republic of

(non-U.S. corporation)
PI US 6207880 B1 20010327
AI US 1998-45360 19980319 (9)
RLI Continuation of Ser. No. WO 1996-EP4109, filed on 19 Sep 1996
PRAI DE 1995-19534759 19950919
DE 1995-19547733 19951220
DT Utility
FS Granted
LN.CNT 1933
INCL INCLM: 800/284.000
INCLS: 800/298.000; 435/069.100; 435/101.000; 435/320.100; 435/419.000; 435/468.000; 435/194.000; 536/023.600
NCL NCLM: 800/284.000
NCLS: 435/069.100; 435/101.000; 435/194.000; 435/320.100; 435/419.000; 435/468.000; 536/023.600; 800/298.000
IC [7]
ICM: C12N015-29
ICS: C12N015-54; C12N015-82; A01H005-00; C12P019-04
EXF 536/23.6; 435/101; 435/194; 435/69.1; 435/320.1; 435/419; 435/468; 800/284; 800/298
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . the glucose chains. One differentiates particularly between amylose-starch, a basically non-branched polymer made up of α-1,4-glycosidically branched glucose molecules, and **amylopectin**-starch which in turn is a mixture of more or less heavily branched glucose chains. The branching results from the occurrence. . .
SUMM The molecular structure of starch which is mainly determined by its degree of branching, the amylose/**amylopectin** ratio, the average chain-length and the occurrence of phosphate groups is significant for important functional properties of starch or, respectively,. . .
SUMM . . . and a maize variety (waxy maize) was established by means of breeding the starch of which consists of almost 100% **amylopectin** (Akasuka and Nelson, J. Biol. Chem. 241 (1966), 2280-2285). Furthermore, mutants of potato and pea have been described which synthesize. . .
SUMM . . . from plants, in particular from starch-synthesizing or starch-storing plants. Cereals (such as barley, rye, oats, wheat etc.), maize, rice, pea, **cassava**, potato etc. are particularly preferred. They can also be produced by means of synthesis methods known to the skilled person.
SUMM . . . These are preferably useful plants, in particular starch-storing plants such as cereals (rye, barley, oats, wheat etc.), rice, maize, peas, **cassava** and potatoes.
SUMM . . . heating, a low maximum viscosity as well as almost no increase in viscosity during cooling (cf. FIG. 7). If the amylose/**amylopectin** ratio of this starch is determined, this starch is characterized in that almost no amylose can be measured. The amylose. . .
SUMM . . . interest, in particular useful plants and preferably starch-storing plants such as cereals (rye, barley, oats, wheat etc.), rice, maize, pea, **cassava** and potatoes.
SUMM . . . potato these parts are the potato seeds, in the case of potatoes the tubers. In order to transform potatoes the **tuber** -specific B33-promoter (Rocha-Sosa et al., EMBO J. 8 (1989), 23-29) may be used particularly, but not exclusively.
SUMM . . . the only option. Also solid plastics products, such as pots, plates and bowls can be produced by means of a **starch content** of more than 50%. Furthermore, the starch/polymer mixtures offer the advantage that they are much easier biodegradable.
SUMM . . . by recombinant DNA techniques are, on the one hand, structure, water content, protein content, lipid content, fiber content, ashes/phosphate content, amylose/**amylopectin** ratio, distribution of the relative molar mass, degree of branching, granule

size and shape as well as crystallization, and on. . .
DETD 8. Determination of the Amylose/**Amylopectin** Ratio in Starch Obtained from Potato Plants
DETD Starch was isolated from potato plants according to standard methods and the amylose/**amylopectin** ratio was determined according to the method described by Hovenkamp-Hermelink et al. (Potato Research 31 (1988) 241-246).
DETD . . . starch were dissolved in elution buffer (final volume 80 ml). The starch was derived from potatoes which produce an almost **amylose-free** starch due to the antisense-expression of a DNA sequence encoding the starch granule-bound starch synthase I (GBSS I) from potato.. . .
DETD b) Determination of the Amylose/**Amylopectin** Ratio
DETD . . . which was isolated from the tubers of transformed potato plants was examined with respect to the ratio of amylose to **amylopectin** . The plant line R4-1 (shown in line 4 of FIG. 6) exhibited an amylose content of more than 70%. For. . .
DETD b) Determination of the Amylose/**Amylopectin** Ratio
DETD . . . which was isolated from the tubers of transformed potato plants was examined with respect to the ratio of amylose to **amylopectin** . The plant line R3-5 (shown in line 4 of FIG. 7) exhibited an amylose content of less than 4%. For. . .
CLM What is claimed is:
15. The transgenic plant according to claim 9 which is a rye, barley, oat, wheat, rice, maize, pea, **cassava** or potato plant.

L5 ANSWER 4 OF 6 USPATFULL
AN 1999:128830 USPATFULL
TI Glycogen biosynthetic enzymes in plants
IN Stalker, David M., Davis, CA, United States
Shewmaker, Christine K., Woodland, CA, United States
PA Calgene, Inc., Davis, CA, United States (U.S. corporation)
PI US 5969214 19991019
AI US 1995-484434 19950607 (8)
RLI Continuation of Ser. No. US 1993-16881, filed on 11 Feb 1993 which is a continuation-in-part of Ser. No. US 1991-735065, filed on 24 Jul 1991, now patented, Pat. No. US 5349123 which is a continuation-in-part of Ser. No. US 1990-632383, filed on 21 Dec 1990, now abandoned And Ser. No. US 1991-731226, filed on 16 Jul 1991, now abandoned And a continuation-in-part of Ser. No. US 1990-536392, filed on 11 Jun 1990, now abandoned
DT Utility
FS Granted
LN.CNT 3046
INCL INCLM: 800/205.000
INCLS: 800/DIG.042; 800/DIG.052; 800/DIG.035; 800/DIG.056; 800/DIG.057; 536/023.200; 536/023.600; 536/023.700; 536/024.100; 435/069.100; 435/069.800; 435/101.000; 435/172.300; 435/419.000; 435/412.000; 435/417.000
NCL NCLM: 800/284.000
NCLS: 435/069.100; 435/069.800; 435/101.000; 435/412.000; 435/417.000; 435/419.000; 536/023.200; 536/023.600; 536/023.700; 536/024.100; 800/298.000; 800/317.200; 800/320.000; 800/320.100; 800/320.200
IC [6]
ICM: A01H005-00
ICS: C12N015-31; C12N015-82; C12N015-84; C12P019-04
EXF 536/23.2; 536/23.6; 536/24.1; 536/23.7; 435/69.1; 435/69.8; 435/172.3; 435/240.4; 435/97; 435/99; 435/101; 435/194; 435/201-204; 435/419; 435/412; 435/417; 800/205; 800/DIG.42; 800/52; 800/55-57
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . form of starch. Starch, a complex polymer of D-glucose, consists of a mixture of linear chain (amylose) and branched chain (**amylopectin**) glucans. Starches isolated from different plants

are found to have distinct proportions of amylose. Typically, amylose comprises from about 10-25% of plant starch, the remainder being the branched polymer **amylopectin**. **Amylopectin** contains low molecular weight chains and high molecular weight chains, with the low molecular weight chains ranging from 5-30 glucose units and the high molecular weight chains from 30-100 or more. The ratio of amylose/ **amylopectin** and the distribution of low molecular weight to high molecular weight chains in the **amylopectin** fraction are known to affect the properties, such as thermal stabilization, retrogradation, and viscosity, and therefore the utility of starch. The highest published low m.w./high m.w. chain ratios (on a weight basis) in **amylopectin** are 3.9/1 for waxy corn starch, which has unique properties. Additionally, duwx, which has slightly more branch points than waxy,. . .

SUMM . . . the presence of phosphate groups. In some plant species, mutants have been identified which have altered contents of amylose and **amylopectin**. Mutations that affect the activity of starch-branching enzyme in peas, for example, result in seeds having less starch and a lower proportion of **amylopectin**. Also, mutations in the waxy locus of maize, which encodes a starch granule bound starch synthase, result in plants which produce **amylopectin** exclusively. Similarly, a potato mutant has been identified whose starch is **amylose-free** (Hovenkamp-Hermelink et al. Theor. Appl. Genet. (1987) 75:217-221). It has been found that varying the degree of starch branching can. . .

SUMM . . . It would thus be desirable to develop plant varieties through genetic engineering, which have increased capacity for starch synthesis, altered amylose/**amylopectin** ratios, altered distribution of low to high molecular weight chains in the **amylopectin** fraction and also starches with novel molecular weight characteristics. In this manner, useful starches with a variety of viscosity or.(get.rest)

SUMM . . . host plant for such transformation is potato because of the large amount of starch production in potato tubers. A typical **tuber** contains approximately 16% of its fresh weight as starch (Burton, W. G., The Potato (1966) 3rd Edition, Longman Scientific and Technical Publications, England, p. 361). Transformation of potato plants with the bacterial CGT structural gene linked to a **tuber** -specific promoter and a leader directing the enzyme, for example, to the amyloplast, provides a means to produce large quantities of. . .

SUMM . . . it can be recognized that the modulation of polysaccharide modification enzymes in these plant cells has implications for modifying the **starch content** and/or composition of these cells. In this manner, plants or plant parts which synthesize and store starch may be obtained which have increased or decreased **starch content** and modified starch related properties such as specific gravity, free sugar content and/or novel and useful starches. In particular, potato starch having decreased amylose and modified **amylopectin** may be produced and further applications to modify starches consisting entirely of **amylopectin** such as that of waxy maize or a mutant potato, are also considered. Similarly, the starch from these plant parts. . .

SUMM . . . is modified. In particular, the percentage of amylose is decreased and the ratio of low m.w./high m.w. chains in the **amylopectin** fraction is increased. This phenotypic effect in planta is indicative of glgA biological activity. Additional disclosure concerning glycogen biosynthetic enzymes. . .

SUMM . . . (Chemistry and Industry, London (1988) 13:410). In addition, it has been discovered that in vitro application of β-CDs to potato **tuber** slices inhibits discoloration, and in vitro application to whole potato tubers prevents a typical blackspot reaction caused by bruising. Additional. . .

SUMM . . . of the protein (e.g. Western or ELISA), as a result of phenotypic changes observed in the cell, such as altered **starch content**, altered starch branching, etc., or by assay for

increased enzyme activity, and the like. If desired the enzyme may be. . .

SUMM . . . the invention is a transcriptional initiation region from the patatin gene of potato, which demonstrates preferential expression in the potato **tuber**. Similarly, other promoters which are preferentially expressed in the starch-containing tissues, such as the zein genes in corn, as opposed. . .

SUMM . . . in the root structures, such as potato (e.g., Irish (Solanum tuberosum), Sweet (Ipomoea batatas), and yam (Discorea spp.)), tapioca (e.g. **cassava** (Manihot esculenta)) and arrowroot (e.g., Marantaceae spp., Cycadaceae spp., Cannaceae spp., Zingiberaceae spp., etc.), or in the stem, such as. . .

SUMM . . . in the plant cells or parts. These alterations may include modification of dry matter content, free sugar content or of **starch content** and/or structure, or modification of specific gravity. The novel plant cells or plant parts can thus be harvested and used. . .

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DETD . . . in sterile distilled water and kept immersed in sterile liquid MS medium (#1118, Gibco; Grand Island; N.Y.) to prevent browning. **Tuber** discs (1-2 mm thick) are prepared by cutting columns of potato **tuber** with a .about.1 cm in diameter cork borer and slicing the columns into discs of the desired thickness. Discs are. . .

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DETD TABLE 2

Analyses of Trangenic Potato **Tuber** Starch

Construct	High Spec. Gravity	Low % Starch	High % Amylose	Low M.W./ High M.W. Chains	High M.W./ Low M.W. Chains

RB-43. . .

DETD . . . also have altered starch. In particular, the percentage of amylose in the transgenic potato tubers is decreased. In addition, the **amylopectin** portion of the starch from transgenic potato tubers has more low molecular weight chains and less high molecular weight chains than wild type potato **tuber amylopectin**, thus indicating that the **amylopectin** from transgenic tubers has more branch points.

DETD . . . glycogen biosynthetic enzymes in plants has been shown to result in starch having altered properties, in particular altered ratios of amylose/**amylopectin** and altered distribution of low molecular weight chain lengths to high molecular weight chain lengths in the **amylopectin** fraction. In this manner, plants, including plant cells and plant parts, having modified starch properties may be obtained, wherein the. . .

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CLM What is claimed:

. . . claim 4, wherein said transcription and translational initiation regions are from a gene which is preferentially expressed in a potato **tuber**.

17. The method of claim 16 wherein said modified starch has an altered amylose to **amylopectin** ratio as compared to that of a control starch storage organ.

. . . of claim 16 wherein said modified starch has an altered ratio of low to high molecular weight chains in the **amylopectin** fraction as compared to that of a control starch storage organ.

L5 ANSWER 5 OF 6 USPATFULL

AN 1998:51944 USPATFULL

TI Glycogen biosynthetic enzymes in plants

IN Stalker, David M., 2736 Cumberland Pl., Davis, CA, United States 95616
Shewmaker, Christine K., 1409 Spring Creek, Woodland, CA, United States 95695
Oakes, Janette V., 2408 Amapola Dr., Davis, CA, United States 95616

PI US 5750875 19980512

AI US 1995-469202 19950606 (8)

RLI Continuation-in-part of Ser. No. US 1990-536392, filed on 11 Jun 1990, now abandoned And a continuation of Ser. No. US 1993-16881, filed on 11 Feb 1993 which is a continuation-in-part of Ser. No. US 1991-735065, filed on 24 Jul 1991, now patented, Pat. No. US 5349123 which is a continuation-in-part of Ser. No. US 1990-632383, filed on 21 Dec 1990, now abandoned And Ser. No. US 1991-731226, filed on 16 Jul 1991, now abandoned

DT Utility

FS Granted

LN.CNT 2684

INCL INCLM: 800/205.000
INCLS: 800/DIG.042; 800/DIG.052; 800/DIG.055; 800/DIG.056; 800/DIG.057; 435/069.100; 435/069.800; 435/097.000; 435/101.000; 435/172.300; 435/412.000; 435/417.000; 435/419.000; 536/023.200; 536/023.600; 536/023.700; 536/024.100

NCL NCLM: 800/284.000
NCLS: 435/069.100; 435/069.800; 435/097.000; 435/101.000; 435/412.000; 435/417.000; 435/419.000; 536/023.200; 536/023.600; 536/023.700; 536/024.100; 800/288.000; 800/298.000

IC [6]
ICM: A01H005-00
ICS: C12N015-82; C12N015-84; C12N015-31; C12P019-04

EXF 536/23.2; 536/23.6; 536/24.1; 536/23.7; 435/69.1; 435/69.8; 435/172.3; 435/240.4; 435/97; 435/99; 435/101; 435/201-204; 435/419; 435/412; 435/417; 800/205; 800/DIG.42; 800/52; 800/55; 800/56; 800/57

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . form of starch. Starch, a complex polymer of D-glucose,

consists of a mixture of linear chain (amylose) and branched chain (**amylopectin**) glucans. Starches isolated from different plants are found to have distinct proportions of amylose. Typically, amylose comprises from about 10-25% of plant starch, the remainder being the branched polymer **amylopectin**. **Amylopectin** contains low molecular weight chains and high molecular weight chains, with the low molecular weight chains ranging from 5-30 glucose units and the high molecular weight chains from 30-100 or more. The ratio of amylose/ **amylopectin** and the distribution of low molecular weight to high molecular weight chains in the **amylopectin** fraction are known to affect the properties, such as thermal stabilization, retrogradation, and viscosity, and therefore the utility of starch. The highest published low m.w./high m.w. chain ratios (on a weight basis) in **amylopectin** are 3.9/1 for waxy corn starch, which has unique properties. Additionally, duwx, which has slightly more branch points than waxy,. . .

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Analyses of Trangenic Potato **Tuber** Starch

Construct	Spec. Gravity	% Starch	% Amylose	% High M.W. Chains	% Low M.W. Chains	Low M.W./ High M.W.
RB-43	1.081. . .					

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CLM What is claimed is:

. . . claim 4, wherein said transcription and translational initiation regions are from a gene which is preferentially expressed in a potato **tuber**.

L5 ANSWER 6 OF 6 USPATFULL

AN 94:82416 USPATFULL

TI Glycogen biosynthetic enzymes in plants

IN Shewmaker, Christine K., Woodland, CA, United States
Stalker, David M., Davis, CA, United States

PA Calgene, Inc., Davis, CA, United States (U.S. corporation)

PI US 5349123 19940920

AI US 1991-735065 19910724 (7)

RLI Continuation-in-part of Ser. No. US 1990-632383, filed on 21 Dec 1990, now abandoned And a continuation-in-part of Ser. No. US 1991-731226, filed on 16 Jul 1991, now abandoned

DT Utility

FS Granted

LN.CNT 1361

INCL INCLM: 800/205.000
INCLS: 800/DIG.041; 800/DIG.052; 800/DIG.055; 800/DIG.056; 800/DIG.057; 435/069.100; 435/069.800; 435/070.100; 435/172.300; 435/240.400; 536/023.200; 536/023.700; 536/024.100; 536/023.400

NCL NCLM: 800/284.000
NCLS: 435/069.100; 435/069.800; 435/070.100; 435/412.000; 435/417.000; 435/419.000; 536/023.200; 536/023.400; 536/023.700; 536/024.100; 800/298.000; 800/317.200; 800/320.000; 800/320.100; 800/320.200

IC [5]
ICM: A01H001-04
ICS: C12N015-00; C07H021-04; C12P021-04

EXF 435/69.1; 435/69.8; 435/70.1; 435/172.3; 435/240.4; 435/320.1; 435/183; 536/27; 536/23.2; 536/23.7; 536/24.1; 536/23.4; 800/205; 800/DIG.42; 800/DIG.52; 800/DIG.55; 800/DIG.56; 800/DIG.57

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . a complex polymer of glucose, consists of a mixture of linear chain and branched chain glucans known as amylose and **amylopectin** respectively. Starches isolated from different plants are found to have variable contents of amylose. Typically, amylose comprises from about 10-25% of plant starch, the remainder being the branched polymer **amylopectin**. **Amylopectin** contains low molecular weight chains and high molecular weight chains,

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DETD . . . and store reserve starch. Plants of interest include, but are not limited to corn, cereal grains, sorghum, rice, potato, tapioca, **cassava**, arrowroot and sago.

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DETD TABLE 2

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CLM What is claimed is:

. . . plant cell of claim 6 wherein said plant is selected from the group consisting of corn, sorghum, rice, potato, tapioca, **cassava**, arrowroot, and sago.

11. A method to modify a potato **tuber**, wherein said method comprises growing a potato plant, under conditions that will permit the formation of a potato **tuber**, wherein the genome of said potato plant comprises a construct according to claim 3, and wherein said transcription initiation region. . .

. . . claim 11 wherein expression of said E. coli glycogen synthase results in modification of the starch composition of said potato **tuber**

13. The method of claim 12 wherein said modified starch has an altered amylose to **amylopectin** ratio as compared to that of a control starch storage organ.

14. The method of claim 11 wherein said potato **tuber** comprises modified starch having an altered ratio of low to high molecular weight chains in the **amylopectin** fraction of said starch, as compared to that of a control potato **tuber**.

15. A potato **tuber** having modified starch, wherein said starch modification consists of an increased percentage of low molecular weight chains in the **amylopectin** portion of said starch, and wherein said potato **tuber** is produced according to the method of claim 11.

16. The potato **tuber** of claim 15, wherein the **amylopectin** fraction of the starch in said potato **tuber** has a ratio of low to high molecular weight chains of at least 4.0.